

# Dr. Kavita Yadav

Assistant Professor (DST INSPIRE Faculty)  
School of Physical and Mathematical Sciences  
Department of Physics, Central University of Haryana  
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## EDUCATION

- 2011 - 2016 : **Ph. D. Physics.**  
*Department of Physics, Indian Institute of Technology Delhi (IITD), INDIA.*  
Title: Study of water wetting and optical properties of metal oxide nanostructures grown by chemical vapor deposition system.  
**Supervisors: Prof. J. P. Singh and Prof. B. R. Mehta.**
- 2007 - 2009 : **M. Sc. Physics (79.6%).**  
*Department of Physics, Kurukshetra University, Haryana.*
- 2004 - 2007 : **B. Sc. (80%).**  
*Kurukshetra University, Haryana.*

## EXPERIENCE

### Research Experience (1 year 3 months)

- 2016 - 2017 : **Sr. project Scientist** [30.09.2016 - 03.07.2017]  
*Nano Scale Research Facility (NRF), IIT Delhi.*
- 2016 : **Project scientist** [01.01.2016 - 30.06.2016]  
*Nano Scale Research Facility (NRF), IIT Delhi.*

### Teaching Experience (3 years and 2 months)

- 2011 - 2014 : **Teaching Assistant** [15.07.2011 - 12.07.2014]  
*Department of Physics, IIT Delhi.*
- 2010 : **Assistant Professor** [20.09.2010 - 21.11.2010]  
*Department of Physics, Kurukshetra University, Haryana.*

## AWARDS/FELLOWSHIPS

- 2017 : **Shri Jaidutt Shrimati Sarasswati Sodha Research Award**  
*For best PhD thesis in Department of Physics, IIT Delhi.*
- 2017 : **INSPIRE Faculty Award**  
*By Department of Science and Technology (DST), Govt. of India.*
- 2017 : **SERB National Post-doctoral Fellowship**  
*By Science and Engineering Research Board (SERB) Department of Science and Technology (DST), Govt. of India*
- 2015 : **Young Scientist International Travel Grant**  
*By Council of Scientific and Industrial Research (CSIR), Govt. of India.*
- 2015 : **Best Poster Presentation Award & Finalist for Graduate Student Award**

*By European Materials Research Society in EMRS-2015 International Conference held in Lille, France.*

- 2015 : **Special Jury Mention Award**  
*For best research and innovation in Open House, IIT Delhi.*
- 2014 : **Best Poster Presentation Award**  
*By Jamia Millia Islamia University, New Delhi, India in NCNRE-2014 Conference.*
- 2013 : **Senior Research Fellowship (SRF)** (Jan. 2013–Dec. 2015).  
*By Council of Scientific and Industrial Research (CSIR), India, MHRD, Govt. of India.*
- 2010 : **Junior Research Fellowship (JRF), All India Rank=17** (Jan. 2011–Dec. 2012).  
*By Council of Scientific and Industrial Research (CSIR), India, MHRD, Govt. of India.*
- 2008 : **Merit Scholarship awarded** in M. Sc.
- 2007 : **Merit Scholarship awarded** in B. Sc.
- 2004 : **Certificate for outstanding academic performance**  
*By Central Board of Secondary Education (CBSE)*

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## PUBLICATIONS

- 2017 Quick and selective dual mode detection of H<sub>2</sub>S gas by mobile app employing silver nanorods array  
Shashank Gahlaut, **Kavita Yadav**, Chandrashekhar Sharan, J. P. Singh  
[ANAL. CHEM.](#) **2017**, 89 (24), 13582–13588. [IF=6.32]
- ZnO nanowires coated smart surface mesh with reversible wettability for efficient on demand oil/water separation  
Parul Raturi, **Kavita Yadav** and J. P. Singh  
[ACS APPL. MATER. INTERFACES](#), **2017**, 9, 6007-6013. [IF=7.145]
- 2016 A fast and effective approach for reversible wetting-dewetting transitions on ZnO nanowires  
**Kavita Yadav**, B. R. Mehta, Saswata Bhattacharya and J. P. Singh  
[SCIENTIFIC REPORTS](#) **2016**, 6, 35073. [IF=5.228]
- Photoluminescence based H<sub>2</sub> and O<sub>2</sub> gas sensing by ZnO nanowires  
**Kavita Yadav**, Shashank K. Gahlaut, B. R. Mehta, and J. P. Singh  
[APPL. PHYS. LETT.](#) **2016**, 108, 071602. [IF=3.14]
- Effect of gaseous atmosphere on photoinduced water wetting of ZnO nanowires  
**Kavita Yadav**, B.R. Mehta, and J. P. Singh  
[AIP Conf. Proc.](#) **2016**, 1731, 080044.
- 2015 Tuning the wettability of indium oxide nanowires from superhydrophobic to nearly superhydrophilic: the effect of oxygen related defects  
**Kavita Yadav**, B. R. Mehta, K. V. Lakshmi, S. Bhattacharya, and J. P. Singh  
[J. PHYS. CHEM. C](#) **2015**, 119, 16026-16032. [IF=4.5]
- Presence of metal-oxide interface enhance photoluminescence from In-In<sub>2</sub>O<sub>3</sub> core-shell nanorods  
**Kavita Yadav**, B.R. Mehta, and J. P. Singh  
[RSC ADVANCES](#) **2015**, 5, 1581-1586. [IF=3.8]

Superhydrophobicity and enhanced UV stability in vertically standing indium oxide nanorods

**Kavita Yadav**, B. R. Mehta, and J. P. Singh

*APPL. SURF. SCI.* **2015**, 346, 361-365.

[IF=3.15]

2014 Template-free synthesis of vertically aligned crystalline indium oxide nanotube arrays by pulsed argon flow in tube-in-tube chemical vapor deposition system

**Kavita Yadav**, B. R. Mehta, and J. P. Singh

*J. MAT. CHEM. C*, **2014**, 2, 6362-6369.

[IF=5.06]

Tunable synthesis of single-crystalline ZnO hexagonal microtubes and nanowires

**Kavita Yadav**, B.R. Mehta, and J. P. Singh

*ADV. SCI. LETT.* **2014**, 20, 1594.

[IF=1.25]

Growth and optical properties of single-crystalline ZnO hexagonal microtubes

**Kavita Yadav**, B.R. Mehta, and J. P. Singh

*Bharti publications, Delhi*. ISBN-978-93-81212-65-3, 2014.

Synthesis and Raman spectrum of crystalline indium oxide micro-rods with rectangular cross-section

**Kavita Yadav**, B.R. Mehta, and J. P. Singh

*AIP Conf. Proc.* 1591, 409 (2014).

## PATENTS

2016 Recyclable Smart Mesh for on Demand Separation of Oily Water

J. P. Singh, **Kavita Yadav** and Parul Raturi

FT/IPR/JPS/DPhy/2016/1589. (Patent filed).

## PROJECTS

2017 INSPIRE Faculty Project - DST

(Ongoing)

*Title: Conversion of CO<sub>2</sub> from air into methanol using a highly efficient catalytic system featuring 100% selectivity and outstanding activity under industrially relevant conditions.*

No. DST/INSPIRE/04/2017/001527

INR 35,00,000/-

Host Institute: Central University, Haryana

## RESEARCH AREA OF INTEREST

- Metal oxide (In<sub>2</sub>O<sub>3</sub>, ZnO, SnO<sub>2</sub> etc.) nanostructures growth with tunable morphology and defects for various applications.
- Photoluminescence based gas sensing of metal oxide nanostructures.
- On demand tuning of water wetting properties of metal oxide nanostructures for their applications in artificial superhydrophobic and superhydrophilic surface preparation.
- Metal oxide nanostructures based smart surface mesh for water-oil filtration.
- Conversion of CO<sub>2</sub> to fuel by using metal oxide catalysts.

## RESEARCH SKILLS

- Synthesis of different metal oxide nanostructures (In<sub>2</sub>O<sub>3</sub>, ZnO, SnO<sub>2</sub>) and their defect tuning during and after growth in controlled manner for on-demand applications like gas sensing, oil-water filtration and catalytic activity.

- Handling of sophisticated instruments like Photoluminescence Spectrometer (PL; Horiba): room temperature and low temperature measurements and PL based mapping, Raman Spectrometer (Horiba), Scanning Electron Microscope (SEM; ZEISS EVO 50), Transmission Electron Microscope (TEM; JEOL JEM-1400 Plus), Energy Dispersive X-ray spectroscopy.
- Computer skills:
  - Data analysis software: Origin, Excel, Image Tool, Image J, Gatan Digital Micrograph, PCPDF win, MATLAB.

## NATIONAL/INTERNATIONAL CONFERENCE PRESENTATIONS

- 2017 Nano India Conference, IIT Delhi, India. **(Poster Presentation)**
- 2016 International Conference on Nano Science and Technology (ICONSAT), IISER Pune, India. **(Poster Presentation)**
- 2015 PEC 2015 International Conference, New Jersey, USA. **(Oral Presentation)**  
EMRS-2015 Spring Meeting and Exhibit, Lille, France. **(Oral and Poster Presentations)**  
60<sup>th</sup> DAE-Solid State Physics Symposium, Amity University, Noida, Uttar Pradesh, India. **(Poster Presentation)**
- 2014 AVS 61st International Symposium and Exhibition, Baltimore, Maryland, USA. **(Oral Presentation)**  
International Conferences on Recent Advances in Nanoscience and Nanotechnology (ICRANN), JNU, New Delhi, India. **(Poster Presentation)**  
National Conference on Nanotechnology and Renewable Energy (NCNRE), Jamia Millia Islamia University, New Delhi, India. **(Poster Presentation)**
- 2013 7th International Conference on Materials for Advanced Technologies (ICMAT) organized by Material Research Society, Suntec - Singapore. **(Oral Presentation)**  
58<sup>th</sup> DAE-Solid State Physics Symposium, Thapar University, Patiala, Punjab, India. **(Poster Presentation)**
- 2012 International Conference on Nano Science and Technology (ICONSAT), Hyderabad, India. **(Poster Presentation)**

## WORKSHOPS/SEMINARS

- **SEM Operation Training**, IIT Delhi, New Delhi, India, September 2014.
- Seminar on “**Bringing the Nanoworld Together**”, organised by oxford instruments in IIT Delhi, New Delhi, India, November 2014.
- Workshop on “**Nano Probe Techniques**”, Nano scale research facility-IIT Delhi, New Delhi, India, July 2014.
- Workshop on **Advances in Nanotechnology**, IIT Delhi, New Delhi, India, January 2014.
- Workshop on **SEM & EDX Training**, IIT Delhi, New Delhi, India, November 2012.

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## KEY ATTRIBUTES

- Innovative and technical attitude towards research activities.
- Hard working, disciplined and self-motivated.
- Take responsibilities and welcome challenges.
- Zeal for learning and exploring new opportunity.
- Quite flexible in any type of environment.

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## REFERENCES

- Prof. J. P. Singh, (Ph.D. Supervisor)  
Department of Physics  
Indian Institute of Technology Delhi, Hauz Khas,  
New Delhi 110016, India  
+91-11-2659-1323, [jpsingh@physics.iitd.ac.in](mailto:jpsingh@physics.iitd.ac.in)
- Prof. B. R. Mehta, (Ph.D. Supervisor)  
Department of Physics  
Indian Institute of Technology Delhi, Hauz Khas,  
New Delhi 110016, India  
+91-11-2659-1333, [brmehta@physics.iitd.ac.in](mailto:brmehta@physics.iitd.ac.in)
- Dr. D. Kanjilal, Scientist H  
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New Delhi 110067, India,  
+91-11-2689-3955 (Ext. 237), [dk@iuac.res.in](mailto:dk@iuac.res.in)

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### **Personal profile:**

Father's Name : Sh. Rajender Singh  
Husband's Name : Mr. Amitender Singh Yadav  
Date of Birth : 07/05/1987  
Sex/Marital Status : Female/ Married  
Address : H.No.-205, Vill.- Rewasa, Distt. & P.O.- Mahendergarh, Haryana-123029.

### **Declaration:**

I hereby declare that the above information is true to the best of my knowledge.